

August 14, 2017

Tom Moe
USS Corporation
P.O. Box 417
8771 Park Ridge Dr
Mountain Iron, MN 55768

RE: Project: Toxicity
Pace Project No.: 1289760

Dear Tom Moe:

Enclosed are the analytical results for sample(s) received by the laboratory on June 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan J Toms
dan.toms@pacelabs.com
(218) 727-6380
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Toxicity
Pace Project No.: 1289760

Duluth Minnesota Certification ID's

4730 Oneota St., Duluth, MN 55807
Minnesota Dept of Health Certification #: 1252596
Nevada DCNR Certification #: MN000372017-1

Montana DHHS Certification #: CERT0102
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

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SAMPLE SUMMARY

Project: Toxicity
Pace Project No.: 1289760

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289760001	WS006 / WS007	Water	06/21/17 09:40	06/21/17 16:15
1289760002	SW002 Receiving Water	Water	06/21/17 08:45	06/21/17 16:15

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SAMPLE ANALYTE COUNT

Project: Toxicity
Pace Project No.: 1289760

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289760001	WS006 / WS007	EPA 120.1 (1982)	AXP	1	PASI-DUL
		SM 2320B (1997)	KJD	1	PASI-DUL
		SM 4500-CL E (2000 & 2011)	DJT	1	PASI-DUL
		SM 4500-H+B (1996)	APR	1	PASI-DUL
		SM 4500-NH3 D (1997)	AXP	1	PASI-DUL
		USGS I-1338-85 (1985)	KJD	1	PASI-DUL
1289760002	SW002 Receiving Water	EPA 120.1 (1982)	AXP	1	PASI-DUL
		SM 2320B (1997)	KJD	1	PASI-DUL
		SM 4500-CL E (2000 & 2011)	DJT	1	PASI-DUL
		SM 4500-H+B (1996)	APR	1	PASI-DUL
		SM 4500-NH3 D (1997)	AXP	1	PASI-DUL
		USGS I-1338-85 (1985)	KJD	1	PASI-DUL

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ANALYTICAL RESULTS

Project: Toxicity
Pace Project No.: 1289760

Sample: WS006 / WS007		Lab ID: 1289760001		Collected: 06/21/17 09:40		Received: 06/21/17 16:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
120.1 Specific Conductance		Analytical Method: EPA 120.1 (1982)							
Specific Conductance	2130	umhos/cm	1.0	1		06/30/17 15:09			
2320B Alkalinity		Analytical Method: SM 2320B (1997)							
Alkalinity, Total as CaCO3	204	mg/L	20.0	1		06/22/17 12:01			
4500CL E Chlorine, Residual		Analytical Method: SM 4500-CL E (2000 & 2011)							
Chlorine, Total Residual	<0.020	mg/L	0.020	1		06/21/17 16:47	7782-50-5	H6	
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B (1996)							
pH at 25 Degrees C	8.0	Std. Units	0.10	1		06/21/17 17:11		H6	
4500 Ammonia Water		Analytical Method: SM 4500-NH3 D (1997)							
Nitrogen, Ammonia	1.5	mg/L	0.20	1		06/30/17 12:11	7664-41-7		
USGS Hardness, Total as CaCO3		Analytical Method: USGS I-1338-85 (1985)							
Total Hardness	1090	mg/L	5.0	1		06/24/17 13:47			

Sample: SW002 Receiving Water		Lab ID: 1289760002		Collected: 06/21/17 08:45		Received: 06/21/17 16:15		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance		Analytical Method: EPA 120.1 (1982)							
Specific Conductance		76.5	umhos/cm	1.0	1		06/30/17 15:10		
2320B Alkalinity		Analytical Method: SM 2320B (1997)							
Alkalinity, Total as CaCO3		31.3	mg/L	20.0	1		06/22/17 12:07		
4500CL E Chlorine, Residual		Analytical Method: SM 4500-CL E (2000 & 2011)							
Chlorine, Total Residual		<0.020	mg/L	0.020	1		06/21/17 16:50	7782-50-5	H6
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B (1996)							
pH at 25 Degrees C		6.7	Std. Units	0.10	1		06/21/17 17:13		H6
4500 Ammonia Water		Analytical Method: SM 4500-NH3 D (1997)							
Nitrogen, Ammonia		<0.20	mg/L	0.20	1		06/30/17 12:18	7664-41-7	
USGS Hardness, Total as CaCO3		Analytical Method: USGS I-1338-85 (1985)							
Total Hardness		46.0	mg/L	5.0	1		06/24/17 13:50		

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QUALITY CONTROL DATA

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 118124 Analysis Method: EPA 120.1 (1982)
QC Batch Method: EPA 120.1 (1982) Analysis Description: 120.1 Specific Conductance
Associated Lab Samples: 1289760001, 1289760002

METHOD BLANK: 467590 Matrix: Water
Associated Lab Samples: 1289760001, 1289760002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	<1.0	1.0	06/30/17 15:01	

LABORATORY CONTROL SAMPLE: 467589

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance	umhos/cm	1410	1370	97	90-110	

SAMPLE DUPLICATE: 467591

Parameter	Units	1289988001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	290	289	0	10	

SAMPLE DUPLICATE: 467592

Parameter	Units	1289760001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	2130	2130	0	10	

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QUALITY CONTROL DATA

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 117226 Analysis Method: SM 2320B (1997)
QC Batch Method: SM 2320B (1997) Analysis Description: 2320B Alkalinity
Associated Lab Samples: 1289760001, 1289760002

METHOD BLANK: 463443 Matrix: Water
Associated Lab Samples: 1289760001, 1289760002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<20.0	20.0	06/22/17 10:56	

LABORATORY CONTROL SAMPLE: 463442

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	50	46.5	93	90-110	

SAMPLE DUPLICATE: 463444

Parameter	Units	1289260005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	246	252	2	10	

SAMPLE DUPLICATE: 463445

Parameter	Units	1289720001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	47.5	47.5	0	10	

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QUALITY CONTROL DATA

Project: Toxicity
Pace Project No.: 1289760

QC Batch:	117330	Analysis Method:	SM 4500-CL E (2000 & 2011)
QC Batch Method:	SM 4500-CL E (2000 & 2011)	Analysis Description:	4500CL E Chlorine, Total Residual
Associated Lab Samples:	1289760001, 1289760002		

METHOD BLANK: 463887 Matrix: Water
Associated Lab Samples: 1289760001, 1289760002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chlorine, Total Residual	mg/L	<0.020	0.020	06/21/17 16:45	H6

LABORATORY CONTROL SAMPLE: 463886

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorine, Total Residual	mg/L	.1	0.090	90	80-120	H6

SAMPLE DUPLICATE: 463888

Parameter	Units	1289760001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chlorine, Total Residual	mg/L	<0.020	<0.020		20	H6

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QUALITY CONTROL DATA

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 117190 Analysis Method: SM 4500-H+B (1996)
QC Batch Method: SM 4500-H+B (1996) Analysis Description: 4500H+B pH Electrometric
Associated Lab Samples: 1289760001, 1289760002

LABORATORY CONTROL SAMPLE: 463295

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	7	7.0	100	98-102	H6

SAMPLE DUPLICATE: 463296

Parameter	Units	1289988002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	1	10	H6

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QUALITY CONTROL DATA

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 118028 Analysis Method: SM 4500-NH3 D (1997)
QC Batch Method: SM 4500-NH3 D (1997) Analysis Description: 4500 Ammonia
Associated Lab Samples: 1289760001, 1289760002

METHOD BLANK: 467273 Matrix: Water
Associated Lab Samples: 1289760001, 1289760002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	<0.20	0.20	06/30/17 10:45	

LABORATORY CONTROL SAMPLE: 467272

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2	1.8	91	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 467274 467275

Parameter	Units	1289988001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.20	2	2	2.1	2.2	102	108	90-110	6	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 467276 467277

Parameter	Units	1289719003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.25	2	2	1.9	2.0	91	97	90-110	6	10	

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QUALITY CONTROL DATA

Project: Toxicity
Pace Project No.: 1289760

QC Batch: 117490 Analysis Method: USGS I-1338-85 (1985)
QC Batch Method: USGS I-1338-85 (1985) Analysis Description: USGS T Hardness as CaCO₃
Associated Lab Samples: 1289760001, 1289760002

METHOD BLANK: 464575 Matrix: Water
Associated Lab Samples: 1289760001, 1289760002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Hardness	mg/L	<5.0	5.0	06/24/17 11:08	

LABORATORY CONTROL SAMPLE: 464576

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Hardness	mg/L	100	103	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 464579 464580

Parameter	Units	1289639002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Hardness	mg/L	116	200	200	320	316	102	100	90-110	1	10	

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QUALIFIERS

Project: Toxicity
Pace Project No.: 1289760

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL Pace Analytical Services - Duluth

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Toxicity
Pace Project No.: 1289760

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1289760001	WS006 / WS007	EPA 120.1 (1982)	118124		
1289760002	SW002 Receiving Water	EPA 120.1 (1982)	118124		
1289760001	WS006 / WS007	SM 2320B (1997)	117226		
1289760002	SW002 Receiving Water	SM 2320B (1997)	117226		
1289760001	WS006 / WS007	SM 4500-CL E (2000 & 2011)	117330		
1289760002	SW002 Receiving Water	SM 4500-CL E (2000 & 2011)	117330		
1289760001	WS006 / WS007	SM 4500-H+B (1996)	117190		
1289760002	SW002 Receiving Water	SM 4500-H+B (1996)	117190		
1289760001	WS006 / WS007	SM 4500-NH3 D (1997)	118028		
1289760002	SW002 Receiving Water	SM 4500-NH3 D (1997)	118028		
1289760001	WS006 / WS007	USGS I-1338-85 (1985)	117490		
1289760002	SW002 Receiving Water	USGS I-1338-85 (1985)	117490		

REPORT OF LABORATORY ANALYSIS

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	Document Name:	Document Revised: 17Apr2017
	Sample Condition Upon Receipt Form	Page 1 of 1
	Document No.: F-DUL-C-001-rev.04	Issuing Authority: Pace Duluth Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

Project #:

WO# : 1289760

PM: DJT

Due Date: 07/12/17

CLIENT: USS CORP

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____ Temp Blank? ☐ Yes ☒ No

Thermometer Used: ☒ IR-1 ☐ 161014660 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.012.0 Cooler Temp Corrected °C: 1.511.5 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: -0.5 Date and Initials of Person Examining Contents: KH 612117

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☒ NA

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5. If Fecal: <input type="checkbox"/> <8 hours <input type="checkbox"/> >8, <24 hours <input type="checkbox"/> >24 hours
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>pH, Res CI</u>
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>wt</u>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: Tom Moe

Date/Time: 8-7-17 @ 10:03 a.m.

Comments/Resolution: Sent an e-mail to Tom inquiring about a Purchase Order Number for this project - waiting for a reply AP 8-7-17
Received an e-mail from Tom to apply USS PO #20475903 for the charges AP 8-7-17

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: AP for DJT

Date: 6-22-17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)